L3 ANSWER 32 OF 33 MEDLINE
AN 92164659 MEDLINE
DN 92164659 PubMed ID: 1537343
TI Identification and characterization of yeast mutants and the gene for a cruciform cutting endonuclease.
AU Kleff S; Kemper B; Sternglanz R
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NC GM28220 (NIGMS)
SO EMBO JOURNAL, (1992 Feb) 11 (2) 699-704.
Journal code: EMB; 8208664. ISSN: 0261-4189.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
OS GENBANK-M65275; GENBANK-X60225
EM 199203
ED Entered STN: 19920417
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AB An assay was developed that detected DNA cruciform cutting endonuclease activity in crude extracts of Saccharomyces cerevisiae. A collection of temperature-sensitive strains was screened using this assay, and a mutant lacking the activity was found. The mutation leading to the enzymatic defect was mapped to the left arm of chromosome XI within 3 **cM** of the centromere. Cloning of the gene for this endonuclease was achieved by **chromosome walking** from the nearby PUT3 locus. The gene, called CCE1 (cruciform cutting endonuclease), was **sequenced** and found to have an open reading frame encoding a 41 kDa protein. The amino acid **sequence** of this eukaryotic endonuclease shows homology neither to its prokaryotic counterparts nor to other proteins in available databases. A cce1 null mutant has no obvious growth defect, and despite the ability of the CCE1 enzyme to cleave Holliday junction analogs, the mutant shows no defect in meiotic or mitotic recombination. A second cruciform cutting activity was detected in extracts from a cce1 null mutant, indicating that yeast has at least two such enzymes. The only phenotype observed for cce1 mutants is a higher than normal frequency of appearance of petite cells, suggesting that the CCE1 protein is important for the maintenance of mitochondrial DNA.

L3 ANSWER 29 OF 33 MEDLINE
AN 92361255 MEDLINE
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TI Effects of ionizing radiation on a plant genome: analysis of two Arabidopsis transparent testa mutations.
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SO PLANT CELL, (1992 Mar) 4 (3) 333-47.
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CY United States
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OS GENBANK-M86358; GENBANK-M86359
EM 199209
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AB Ionizing radiation is known to cause chromosomal alterations such as inversions and deletions and has been used extensively for inducing mutations. In Arabidopsis, two methods for the isolation of genes identified on the basis of mutant phenotypes--genomic subtraction and **chromosome walking**--either rely on or are greatly facilitated by the availability of these types of mutations. This article gives a detailed characterization of ionizing radiation-induced mutations in plants. The Arabidopsis genes encoding chalcone flavanone isomerase (CHI) and dihydroflavonol 4-reductase (DFR) were cloned and found to correspond to two transparent testa loci. A CHI allele, generated by fast-neutron irradiation, consisted of an inversion within the gene. A 272-bp fragment from 38 **centimorgans** away on the same chromosome was transferred to one end of this inversion. A DFR allele, induced by x-irradiation, contained two deletions and an inversion of the 2.8-**centimorgan** intervening region. **Sequence** analysis of the break points in both mutants indicate that repair of radiation-induced damage involves mechanisms similar or identical to those that mediate the integration of foreign **sequences** into the genome. The chromosome rearrangements found in these mutants have important implications for the use of ionizing radiation-induced alleles in classical and molecular genetic experiments in plants.